

### Self – Diagnostic Exam Solutions

1.  $\frac{x^4}{yz^8}$

2.  $\frac{m^{4x}}{m^{7y}}$

3.  $2(y^2 + 4x^2)(y - 2x)(y + 2x)$

4.  $\frac{x-3}{x^2 + 4x + 3}$  or  $\frac{x-3}{(x+1)(x+3)}$

5.  $-3(1 + \sqrt{2})$

6.  $\frac{2x}{y}$

7. 16

8.  $\frac{ab-1}{a-b}$

9.  $\frac{40x+5}{60x-4}$

10. There are no real solutions

11. 3 feet

12. 375 miles

13.  $(x-2)^2 = 1$

14.  $y = 7x$

15.  $-\frac{1}{9}$

16.  $2xh + h^2$

17.  $\sqrt{x^2 - 6x}$

 18. All  $x$  less than 9

19.  $y = -3x + 7$

20.  $25^\circ C$

21. 2

22.  $(-\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2})$  and  $(\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2})$

23. Vertex :(-3,12); maximum :12

24.  $-\frac{17}{2} \leq x \leq \frac{3}{2}$

25.  $x \geq \frac{8}{3}$  or  $x \leq -\frac{4}{3}$

26.  $-6 \leq x \leq 6$

27. Roots :3 and 4; each has multiplicity 2

28. - 0.25

29. 0.5

30. The point is on the unit circle

31.  $\frac{7\pi}{4}$

32. 0

33.  $150^\circ$

34.  $\sin(\theta)$

35.  $\frac{3}{4}$

36.  $\frac{11\pi}{6}$

37.  $\frac{x}{y}$

38.  $\pi$

39.  $\sin(\theta)$

40. 1

Problems Numbered:	Topics Covered:
1-7	Basic concepts of Algebra
8-15	Equations, Inequalities, and Problem Solving
16-22	Functions and Graphs
23-27	Polynomial and Rational Functions
28-29	Exponential and Logarithmic Functions
30-40	Trigonometric Functions and Identities